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THE MINERAL INDUSTRY OF PENNSYLVANIA IN 1975

William Kebblish

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES

BUREAU OF

TOPOGRAPHIC AND GEOLOGIC SURVEY

Arthur A. Socolow, State Geologist

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The Mineral Industry of Pennsylvania

This chapter has been prepared by the Bureau of Mines, U.S. Department of the Interior, and the Pennsylvania Bureau of Topographic and Geologic Survey, Department of Environmental Resources, under a cooperative agreement for collecting information covering mineral production from mines, quarries, and wells.

By William Kebblish [1]

Pennsylvania mineral production reached a record output value of $2,907.8 million, a $533.4 million increase above that of 1974. Compared with 1974, increases in value were attained by anthracite coal, bituminous coal, lime, natural gas, petroleum, sand and gravel, and zinc. Compared with 1974, the average f.o.b. mine value of anthracite coal increased $10.12 per ton and that of bituminous coal increased $4.74 per ton. Collectively, solid fuels production accounted for 79.4% of the total mineral production value, and the value of all fossil fuels equaled 82.7% of the total mineral production value.

Pennsylvania led the Nation in the value of stone output but dropped to second place in production; the State was

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Table 1.—Mineral production in Pennsylvania [1]

Mineral	1974 Quantity	1974 Value (thousands)	1975 Quantity	1975 Value (thousands)
Cement:				
Masonry ---thousand short tons--	404	$14,642	357	$14,640
Portland ---do---	7,448	191,594	5,815	168,220
Clays [2] ---do---	2,732	16,496	1,945	13,672
Coal:				
Anthracite ---do---	6,617	144,695	6,203	198,481
Bituminous ---do---	80,462	1,637,394	84,137	2,111,009
Gem stones	NA	9	NA	9
Lime ---thousand short tons--	2,080	50,147	1,940	60,047
Natural gas ---million cubic feet--	82,637	36,360	84,676	57,156
Peat ---thousand short tons--	30	515	27	488
Petroleum (crude) thousand 42-gallon barrels--	3,478	36,220	3,264	39,647
Sand and gravel ---thousand short tons--	18,071	45,181	17,401	48,742
Stone ---do---	73,092	159,615	60,177	149,670
Zinc (recoverable content of ores, etc.) short tons--	20,288	14,567	21,090	16,450
Value of items that cannot be disclosed: Clay (kaolin), iron ore, mica (scrap, 1975), natural gas liquids, and tripoli	XX	r 26,993	XX	29,607
Total	XX	r 2,374,428	XX	2,907,838
Total 1967 constant dollars	XX	1,122,630	XX	p 1,151,504

p Preliminary. r Revised. NA Not available. XX Not applicable.

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2] Excludes kaolin; included with "Value of items that cannot be disclosed."

Table 2.—Value of mineral production in Pennsylvania, by county [1] [2]

(Thousands)

County	1974	1975	Minerals produced in 1975 in order of value
Adams	$14,488	W	Stone, lime, clays, mica.
Allegheny	92,741	$124,766	Coal, cement, petroleum, stone, clays, sand and gravel.
Armstrong	115,804	W	Coal, sand and gravel, clays, stone, petroleum.
Beaver	W	W	Coal, sand and gravel, clays, petroleum.
Bedford	2,663	W	Stone, coal.
Berks	47,274	49,935	Iron ore, cement, stone, sand and gravel, coal, clays.
Blair	3,569	3,364	Stone, coal, sand and gravel.
Bradford	W	W	Sand and gravel.
Bucks	19,293	W	Stone, sand and gravel, clays.
Butler	48,061	50,648	Coal, cement, stone, lime, petroleum, sand and gravel, clays.
Cambria	W	267,816	Coal.
Carbon	6,825	W	Coal, sand and gravel, stone.
Centre	W	W	Coal, lime, stone, clays.
Chester	13,777	W	Stone, lime, clays.
Clarion	96,284	92,308	Coal, stone, petroleum, clays, sand and gravel.
Clearfield	147,144	173,237	Coal, clays.
Clinton	11,011	W	Coal, stone, clays.
Columbia	1,780	W	Coal, sand and gravel, stone.
Crawford	W	W	Sand and gravel, petroleum.
Cumberland	4,460	W	Stone, sand and gravel, clays.
Dauphin	5,007	W	Stone, coal, sand and gravel.
Delaware	W	W	Stone.
Elk	W	W	Coal, petroleum, stone.
Erie	W	2,970	Sand and gravel, peat.
Fayette	56,523	W	Coal, stone, clays.
Forest	W	W	Petroleum, sand and gravel.
Franklin	W	W	Stone, sand and gravel.
Fulton	W	W	Stone, sand and gravel, coal.
Greene	206,949	W	Coal, petroleum.
Huntingdon	7,599	9,093	Sand and gravel, stone, coal, clays.
Indiana	W	198,168	Coal, stone.
Jefferson	W	44,433	Coal, clays, stone, petroleum.
Juniata	--	312	Stone.
Lackawanna	W	W	Coal, stone, peat.
Lancaster	13,021	W	Stone, clays, sand and gravel.
Lawrence	43,914	W	Cement, coal, stone, sand and gravel, clays, peat.
Lebanon	W	W	Lime, stone.
Lehigh	44,354	W	Cement, zinc, stone.
Luzerne	42,709	W	Coal, stone, sand and gravel, peat, clays.
Lycoming	r 25,945	8,380	Coal, stone, sand and gravel.
McKean	W	W	Petroleum, stone, clays.
Mercer	W	8,239	Coal, sand and gravel, stone, petroleum.
Mifflin	834	W	Stone, sand and gravel, lime.
Monroe	2,285	W	Stone, sand and gravel, peat, clays.
Montgomery	24,314	W	Stone, cement, lime, clays.
Montour	r 868	W	Stone.
Northampton	101,468	82,750	Cement, stone, sand and gravel.
Northumberland	23,782	W	Coal, stone, sand and gravel, clays, tripoli.
Perry	W	W	Stone.
Pike	795	W	Sand and gravel, stone.
Potter	252	W	Petroleum, stone, sand and gravel.
Schuylkill	W	W	Coal, stone, sand and gravel.
Snyder	W	W	Stone, coal.
Somerset	112,149	W	Coal, stone, clays, sand and gravel.
Sullivan	W	551	Coal.
Susquehanna	999	472	Stone.
Tioga	W	W	Coal, stone, sand and gravel.
Union	W	W	Stone, clays.
Venango	W	15,854	Coal, petroleum, sand and gravel, natural gas liquids.
Warren	W	7,346	Petroleum, sand and gravel, natural gas liquids.
Washington	W	W	Coal, petroleum, clays.
Wayne	W	W	Stone, sand and gravel, peat.
Westmoreland	58,744	81,298	Coal, stone, sand and gravel.
Wyoming	1,950	1,775	Sand and gravel.
York	34,288	34,043	Cement, stone, lime, sand and gravel, clays.
Undistributed [3]	r 940,495	1,650,077	
Total [4]	r 2,374,428	2,907,838	

r Revised. W Withheld to avoid disclosing individual company confidential data; included with "Undistributed."

[1] Cameron and Philadelphia Counties are not listed because no production was reported.

[2] Value of petroleum is based on an average price per barrel for the State.

[3] Includes some natural gas liquids that cannot be assigned to specific counties, natural gas, gem stones, and values indicated by symbol W.

[4] Data may not add to totals shown because of independent rounding.

Table 3.—Indicators of Pennsylvania business activity

		1974	1975 p	Change, percent
Employment and labor force, annual average:				
Total labor force	thousands	5,043.0	5,072.0	+0.6
Unemployment	do	258.0	422.0	+63.6
Employment (nonagricultural):				
Mining	do	42.3	46.5	+9.9
Manufacturing	do	1,461.8	1,335.8	−8.6
Contract construction	do	206.4	187.4	−9.2
Transportation and public utilities	do	266.4	256.2	−3.8
Wholesale and retail trade	do	898.4	890.9	−.8
Finance, insurance, real estate	do	209.2	208.1	−.5
Services	do	772.0	800.3	+3.7
Government	do	672.5	690.6	+2.7
Total nonagricultural employment	do	4,529.0	4,415.8	−2.5
Personal income:				
Total	millions	$64,955	$70,296	+8.2
Per capita		$5,485	$5,943	+8.4
Construction activity:				
Number of private and public residential units authorized		39,157	33,019	−15.7
Value of nonresidential construction	millions	$468.3	$447.9	−4.4
Value of State road contract awards	do	$550.0	$243.0	−55.8
Shipments of portland and masonry cement to and within Pennsylvania	thousand short tons	3,350	2,920	−12.8
Mineral production value:				
Total crude mineral value	millions	r $2,374.4	$2,907.8	+22.5
Value per capita, resident population		$200.53	$245.18	+22.3
Value per square mile		$52,377.47	$64,144.35	+22.5

p Preliminary. r Revised.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

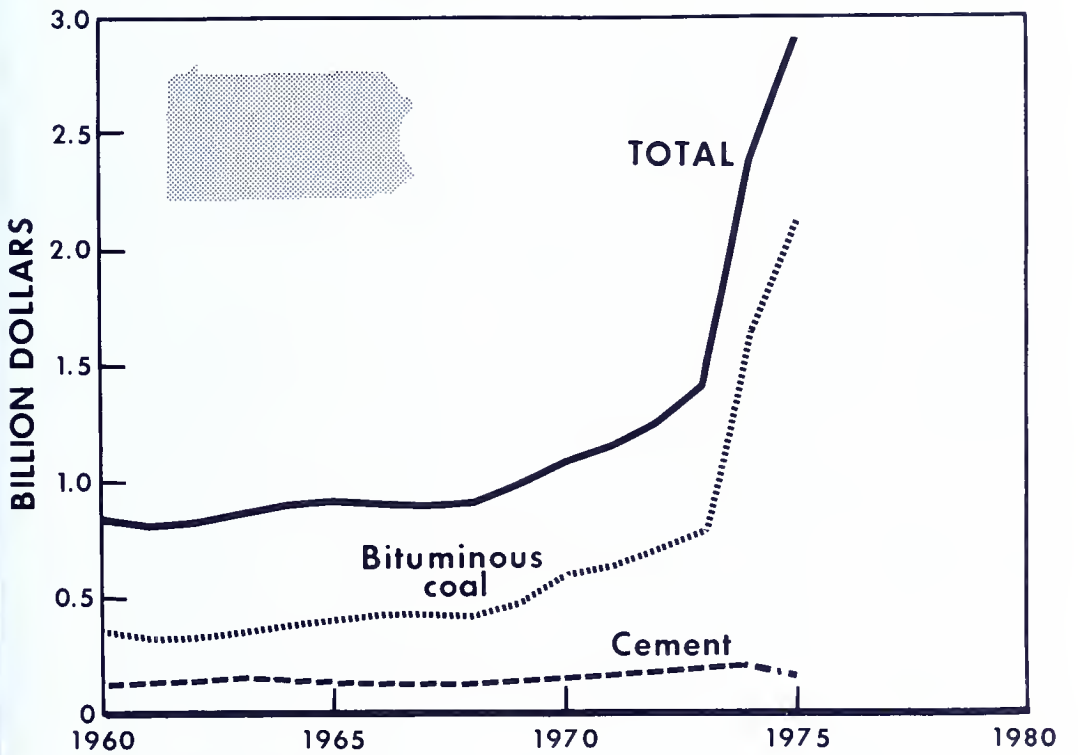

Figure 1.—Value of bituminous coal, cement, and total value of mineral production in Pennsylvania.

second in lime production, third in bituminous coal production, third in cadmium production, third in cement, and seventh in zinc production.

Legislation and Government Programs.—During the year, the General Assembly was involved in continuing negotiations on legislative action pertaining to coal policy. The passing of an amendment to the Revenue Bond and Mortgage Act to provide tax-free financing for coal facilities was significant.

Environment.—The Land and Water Conservation and Reclamation Act (Public Law 990, No. 443), approved on January 19, 1968, and later amended by Act 57 of March 5, 1970, appropriated the sum of $200 million to the Department of Mines and Mineral Industries, now known as the Department of Environmental Resources (DER), for State reclamation projects. Act 193, dated July 12, 1972, allocated $150 million for the prevention, control, and elimination of air pollution from abandoned burning coal refuse banks, provided such land and bank material is publicly owned; $30 million was allocated for the prevention of surface subsidence above abandoned mine operations, for the control and extinguishment of surface and underground fires from abandoned mines, and for necessary administration expenses.

Completed projects in the anthracite region totaled 105 at a cost of $36.8 million. Sixty projects were related to stream pollution abatement, 14 to air pollution, 11 to mine fires, and 20 to subsidence control. Of 335 projects completed in the bituminous region, 244 were related to stream pollution abatement, 8 to air pollution control, 39 to mine fires, and 44 to subsidence. The total cost of completed projects amounted to $64.3 million.

Four hundred and forty of the 613 reclamation projects have been completed in 36 counties throughout the State. Allegheny County led with 75 projects, followed by Butler, 46; Washington, 45; Schuylkill, 43; Clearfield, 37; and Luzerne, 34. Five current projects related to mine subsidence, 4 to underground mine fires, 3 to control of burning banks, and 161 to stream pollution abatement.

Current State subsidence projects included SL 446, Saline Reformed Church, Salina, Bell Township, Westmoreland County; SL 449, Jefferson Township, Fayette County; SL 452, Bellemore Elementary School, Washington Township, Fayette County; SL 427, City of Scranton, Lackawanna County which is part of an Appalachian project; and SL 420, City of Wilkes-Barre, Luzerne County. Underground mine fire control projects included SL 335, Upper Tyrone, Fayette County; SL 334, East Huntington Township, Westmoreland County; SL 330, Greater Pittsburgh Airport, Allegheny County; and SL 309, West Mahanoy Township, Schuylkill County. Burning bank projects include SL 208, North Fayette Township, Allegheny County; SL 210–3, Forrestville, Schuylkill County; and SL 211, Williams Township, Dauphin County. Current stream pollution abatement projects are listed in Pennsylvania's DER bond issue report.

Pennsylvania Act 443 empowers and authorizes the DER to construct and operate plants for the control and treatment of water pollution resulting from mine drainage and to assess mine operators a nominal amount according to quantity and quality of mine discharge if mine operators prefer to use State facilities. Since inception of the program, 5 operators in Dauphin County produced a total of 145,000 tons of anthracite and paid $21,638 to the escrow fund for treatment of mine drainage water, 34 operators in Northumberland County produced 277,992 tons of anthracite and paid $41,456, and 93 mine operators in Schuylkill County produced 2,682,000 tons and paid $428,874.

Twelve treatment plants in 10 counties have been constructed or are planned for the prevention, control, and elimination of stream pollution from mine drainage. Seven of the treatment plants have been completed, four were under construction, and one was being designed. The Altoona plant in Blair County will have a daily capacity of 10 million gallons; plant construction began in 1970, and work was still in progress. Bucks Mountain treatment plant has a daily capacity of 5 million gallons and was placed into operation on April 15, 1970. Crooked Creek treatment plant in Indiana County is in the design stages. Hawk Run plant is designed for 500,000 gallons per day; construction began in December 1970, and work was still in progress. Pigeon Creek plant in Carroll Township, Washington County, has a ca-

pacity of 1.15 million gallons per day and was completed in September of 1970. Rausch Creek treatment plant, Schuylkill County, has a planned capacity of 10 million gallons per day; construction began in September 1970, and work was still in progress. Sandy Run plant, Luzerne County, a 15-million-gallon-per-day plant, began operation in April 1970. Slippery Rock Creek has a treatment capacity of 12 to 15 million gallons per day and began operations in December 1970. South Township is rated at 500,000 gallons per day and was placed in operation in April 1971. Swamp Creek plant has a capacity of 10 million gallons and began operating in October 1970. Washington Township treatment plant in Indiana County is the second most expensive of the 12 plants; construction began in July 1975. Wildwood plant in Hampton Township, Allegheny County, has a capacity of 1.15 million gallons, and work was completed in October 1974.

Pennsylvania surface mining operators are required by law to obtain a license prior to mining coal or other minerals. During 1975 a total of 1,041 surface mining licenses were issued by the Pennsylvania DER; 804 were renewals, and 237 were listed as new licenses. License renewals are required each year, and a reduced license cost applies to operators mining 2,000 tons or less of marketable minerals, other than coal. Operators mining without a license shall be guilty of a misdemeanor. A mine drainage permit for surface and/or underground mines must also be obtained from DER prior to mining operations. The applicant must submit information that will enable DER to determine whether or not the proposed mining operation would be conducted in a manner that would prevent pollution to Commonwealth waters. During 1975 a total of 1,149 permit applications were processed (734 were new applications and 415 were amended applications), which resulted in the issuance of 995 permits, 698 of which were for new areas while 297 were amended permits. Only 18 of the applicants were refused a permit. Permits become null and void 2 years after the date of issuance unless within that time the mine has been placed in production. A drainage permit is revoked if the mine operator is in violation of the law. Mine operators are required to submit monthly operation reports concerning water treatment progress, separate acid-forming materials from the spoil which is placed along the bottom of the pit close to the base of the spoil pile to reduce pollution and to divert surface water from acid-bearing strata.

Before a licensed surface mining operator proceeds to mine minerals by surface mining methods, a permit is required for each separate mining location and is valid until the operation is completed or abandoned. Applicants for a mining permit must submit a map of the area to be mined in addition to related information. A reclamation plan must also be submitted showing complete and detailed plans for reclamation of the affected land. During 1975, 1,617 bituminous applications were filed and 1,401 permits issued, including 727 original permits, 610 amended permits, and 64 corrected permits. In the anthracite region 44 applications were filed and 41 permits issued, including 35 original permits, 5 amended permits, and 1 corrected permit.

Prior to commencing mining operations the operator shall file with DER a surety or collateral bond for the land affected by each operation. The amount of the bond required shall be an amount determined by the DER based upon the total estimated cost to the Commonwealth of completing the approved reclamation plan, and no bond shall be filed for less than $5,000. During 1975 bonds deposited for the bituminous region totaled $20.4 million, $9.9 million were surety bonds at $500 an acre, $6.4 million were surety bonds at $1,000 an acre, $0.6 million were surety bonds at $1,150 an acre, $0.054 million were surety bonds at $1,200 an acre, $0.020 million were surety bonds at $3,000 an acre, $3 million were collateral bonds at $500 an acre, $0.37 million were collateral bonds at $1,000 an acre, and $0.05 million were collateral bonds at $1,150 an acre.

In the anthracite region the total bonds deposited amounted to $0.478 million.

As reclamation occurs, the mine operator may request release of the bond for that area. During 1975 the total bonds released for the bituminous region amounted to $6 million, of which $5.4 million represented bonding at $500 an acre, $0.58 million represented bonding at $1,000 an acre, and

$0.05 million represented bonding at $400 an acre. In the anthracite region the total amount of bonds released was $0.47 million. To determine effective reclamation measures the State may hold 5% of the bond for a period of 5 years from the completion date as a contingency allowance for the reimbursement of the Commonwealth of any cost encountered owing to faulty or negligent work on the part of the operator.

Subsidence problems have occurred in the southwestern counties for years. To identify potential problem areas, three maps of the Pittsburgh and Upper Freeport coalbed have been prepared which will aid planning agencies as well as residents. These maps can be obtained from the U.S. Geological Survey in Washington, D.C.

The Commonwealth of Pennsylvania through its coal and clay mine subsidence insurance fund has paid claims to policy holders for mine subsidence damages in excess of $1 million since it was established by the General Assembly in 1961. Approximately 7,000 current policies are in effect throughout the State.

Early in April a Federal-State project was approved to protect 70 acres in Plymouth. The endangered area overlies abandoned anthracite mines, and collapse of the mine pillars could cause subsidence. The threatened area includes 520 homes, 5 churches, 2 schools, and a population estimated at 10,400. To provide ground support, controlled backfilling using crushed coal mine waste mixed with water will be flushed down boreholes drilled from the surface.

A subsidence control project using hydraulic flushing involves the Oregon and Welsh Hill sections of Pittston. Filling of 186 acres of mine voids beneath the city will require approximately 1 million cubic yards of refuse material.

Subsidence project number 12, phase 1, Hill Section, City of Scranton, Lackawanna County, involved the backfilling of mine voids in the Clark, the Top Split of the 1 Dunmore, and the 1 and 2 Dunmore beds with ½ inch-size breaker refuse material. Phase 2 involved backfilling of mined areas in the abandoned Pine Brook mine. Project number 15, Borough of Swoyersville, Luzerne County, involved subsidence control by hydraulic backfilling in the 4-foot and 6-foot beds of the abandoned Harry E colliery using minus ½-inch crushed mine refuse. Project number 18, Mt. Carmel Borough, Northumberland County, involved backfilling the Middle and Bottom splits of the Mammoth bed of the abandoned Sayre colliery in the vicinity of 8th and Hickory Streets within the borough limits.

Mine fire control projects 49, 50, and 51 have been approved by the Appalachian Regional Commission and were being revised by State reclamation authorities. Project 49 involved the Glen Burn colliery, Cameron-Luke Fidler mines, Shamokin. Phase 1 included exploratory drilling, and Phase 11, flushing an incombustible underground barrier. Projects 50 and 51 are located in western Pennsylvania, and were being revised by State authorities prior to State acceptance of the projects.

An emergency occurred in the Pittsburgh area between November 16 and November 20 when cold air several hundred feet above the ground trapped underlying warmer air, forming what weathermen call an inversion. This inversion trapped pollutants and caused a thick smog, forcing industrial plants to curtail production. United States Steel reported over 1,500 workers laid off because of the smog. While an air pollution index reading of 35 is considered satisfactory, Liberty Borough peaked at a reading of 251 with readings of 173 in Clairton, Hazelwood, Liberty, North Braddock, and the downtown Pittsburgh area. The Allegheny County Health Department ended the emergency alert at 2 p.m. on November 20 as air pollution index levels dropped in industrial areas surrounding the city.

In early October, the U.S. Environmental Protection Agency (EPA), Allegheny County, and Jones and Laughlin Steel Corp. (J&L), a unit of LTV Corp. signed a consent order establishing a timetable for compliance with Federal clean air standards at the firm's Pittsburgh works. Of the $200 million pollution control plan, $100 million would be for pollution control equipment and $100 million for plant modernization which would further reduce air pollutants.[2]

[2] American Metal Market. V. 82, No. 163, Aug. 22, 1975, pp. 1, 20.

Coke oven emissions continued to be a problem throughout 1975. Coke oven doors that are not cleaned after every cycle create carbon and tar deposits which help cause smoke emissions. These emissions include benzopyrene, a suspected carcinogen.[3]

United States Steel has spent $3 million in developing a coke-side enclosure at its Clairton works. These enclosures will be only a minor part of control measures that will be needed at 250 batteries at 65 U.S. coke plants which employ approximately 15,000 workers. Estimates of the cost to cope with the coke oven problem range from $500 million to $4 billion.[4]

Bethlehem Steel Corp. reportedly plans to spend $74 million by March 1978 on air pollution measures at the Johnstown and Bethlehem plants. A new $50 million controlled basic oxygen furnace will replace an open hearth furnace at the Johnstown plant, and the remaining $24 million will cover air pollution control facilities. Bethlehem has already spent $22.2 million for air pollution control facilities and another $70 million for water pollution control, some of which has been committed for future needs. Other steel companies throughout Pennsylvania faced similar pollution control problems during 1975. Union Switch and Signal division of Westinghouse Air Brake Co. reported in early May the closing of its forging operations employing 25 people because of difficulties in meeting county air pollution standards.

The electric industry is also required to meet State and Federal air standards. DER has ordered Metropolitan Edison Co. of Reading to pay a $10,000 per month penalty for excessive emissions from the two coal-fired boilers at the utility's Crawford generating station at Middletown, if State standards are not met by March 1, 1977.

West Penn Power Co. planned to spend $61 million for a 750-foot chimney, which will be one of the tallest structures in the State, plus other pollution control equipment for its New Castle, Lawrence County, plant. Electrostatic precipitators will be installed to remove 99.5% of the particulate matter from the flue gases. Construction is scheduled for completion in 1979.

The Pennsylvania Power and Light Co. (PP&L) has agreed to install necessary pollution control equipment by 1980 at its Brunner Island Station, York Haven, and Montour generating plants.

The County Industrial Development Authority (IDA) approved issuance of $48.8 million in bonds to finance Duquesne Light Co. pollution control projects at its Phillips and Elrama power stations. The $48.8 million issue brings the total IDA-approved bonds for the two projects to $88.8 million. IDA bonds carry a lower interest rate because they are tax exempt.

Firestone Tire and Rubber Co. gave permission to experiment with burning high-sulfur coal in a boiler at its tire and plastics facility in Pottstown. The program is designed to evaluate a scrubbing system developed by FMC Corp. of Chicago.

Pennsylvania coal producers were facing a crisis because of the high sulfur content of coal produced. During the past few months industrial firms have canceled coal contracts and switched to oil and gas to meet air pollution regulations. General Public Utilities Corp. and New York State Electric & Gas Corp. revealed plans to build a $35 million coal-cleaning plant at the Homer City, power station using an advanced technology which removes sulfur from the coal.[5]

This modern coal cleaning process produces a washed coal with only 0.8% sulfur which meets air pollution regulations and a higher sulfur coal of 2.2% sulfur that can be used in existing powerplants.

The Pennsylvania coal industry asked the State legislature for aid in an effort to retain present coal markets. A State report on air quality, based on tests from 17 monitors that make up the Commonwealth of Pennsylvania Air Monitoring System, showed the Allegheny County, Philadelphia, Johnstown, and Beaver Valley air basins have occasional high sulfur dioxide levels, but that the air in the rest of Pennsylvania urban areas is much cleaner than required by Federal standards.

In early September charts presented by the Health Department to the Pennsylvania Health Conference showed that sulfur dioxide content in Philadelphia meets Federal acceptable levels; in 1956 the sulfur dioxide level was more than 400% over the Federal standard. At DuBois, the EPA monitored oxidants in the

[3] Chemical Week. Nov. 26, 1975.
[4] Work cited in footnote 3.
[5] Constructioneer. Nov. 10, 1975, p. 16.

air which are produced when auto exhaust pollutants are exposed to sunlight. These oxidants are the chief cause of smog and should not exceed 0.08 part per million (ppm) during any 1 hour.

Electricity.—Although the overall amount of power used in Pennsylvania in 1974 declined slightly, the electric utilities expected the State's power-generating capacity to increase 50% in the next 10 years. Business and industry accounted for over two-thirds of Pennsylvania consumption of electricity, and residential use accounts for 28%.[6]

During the year the energy park concept was considered for Pennsylvania. Four utilities, Philadelphia Electric Co., Metropolitan Edision Co. of Reading, Pennsylvania Electric Corp. of Johnstown, and PP&L of Allentown, were exploring 10 possible sites throughout the State where powerplants might be clustered in small geographical areas with advantages in efficiency and pollution control. At yearend the energy park concept was still under study.

In early March the Federal Energy Administration (FEA) was considering a plan for 80 large electric powerplants to stop burning oil or natural gas and switch to coal as a means to conserve oil and natural gas. The plants affected in Pennsylvania were the Mitchell plant, Monongahela; the Springdale plant of Allegheny Power Service Corp.; the Cromby plant, Phoenixville; and Delaware plant, Philadelphia, of Philadelphia Electric Co.

In the next 25 years it is estimated that the United States will need an additional 1.5 million to 2.2 million tons of U–238 as powerplant fuel. With the need for more energy, the search for uranium continues. In Pennsylvania, uranium-thorium minerals were found to be common in an abandoned serpentine-talc quarry near Easton.[7]

Transportation.—The U.S. Railway Association (USRA), a Federal agency, unveiled a plan in late February to streamline seven financially ailing northeast railroads into one profitmaking system as provided for in section 215 of the Regional Rail Reorganization Act of 1973. The program is administered in cooperation with the Department of Transportation. The Consolidated Rail Corporation (ConRail) was created by USRA to facilitate orderly and efficient implementation of the Final System Plan by permitting ConRail to purchase supplies, materials, and equipment as needed when ConRail assumes operation of the bankrupt railroad on March 1, 1976. The bankrupt railroads that would be part of ConRail include the Penn Central, the Reading, the Lehigh Valley, the Central of New Jersey, the Pennsylvania Reading Seashore Lines, the Lehigh and Hudson River, and the Ann Arbor railroads. The Erie Lackawanna Railroad also asked to be included into the ConRail system.

The physical plant of the bankrupts under study reaches into 17 States and includes, among other things, about 21,000 miles of rights-of-way, 43,000 miles of track, more than 20 classification yards and 60 shop facilities, over 8,000 highway grade crossings with automatic protection, some 1,300 automatically controlled interlocking plants, 30,000 bridges, 4,500 locomotives, 175,000 freight cars, and numerous other buildings and properties.

REVIEW BY MINERAL COMMODITIES

MINERAL FUELS

Coal (Anthracite).—Production of anthracite totaled 6.2 million tons, or 6% less than in 1974. Washery and bank production declined 4.7%, stripping production declined 10.6%, and underground production declined 5.6%.

Schuylkill County was the leading producer of anthracite with 2.75 million tons, followed by Luzerne with 1.69 million tons; Northumberland, 0.79 million tons; Lackawanna, 0.20 million tons; Carbon, 0.095 million tons; Columbia, 0.046 million tons; Sullivan, 0.028 million tons; and Dauphin, 0.025 million tons. Coal production increased in Columbia, Lackawanna, Luzerne, and Sullivan Counties, but decreased in Carbon, Dauphin, Northumberland, and Schuylkill Counties.

Of the total production, 57% was shipped to market by truck, 33%, by rail,

[6] Pennsylvania Electric Association. Facts—1975.

[7] Pennsylvania Geology. V. 6/6, December 1975, p. 11.

8% was sold to local trade, and the remainder was used at the mine for steam and heat.

Leading anthracite producers in order of declining production were Jeddo-Highland Coal Co., Reading Anthracite Co., Bethlehem Mines Corp., Beltrami Enterprises, Inc., Leon E. Kocher Coal Co., Ken Pollock, Inc., Hecla Machinery and Equipment Co., and Heavy Media, Inc.

During 1975, 203 operators were active in the anthracite region, operating 108 deep mines, 102 strip mines, 87 bank mines, and 91 breaker preparation plants; 1 operator was listed as having a tourist mine.

The 3-year contract between the United Mine Workers of America (UMWA) and the Pennsylvania anthracite operators expired on March 31, and a new contract was signed in late April covering approximately 2,300 anthracite workers. Coal supplies were adequate during the year. The opening of the Huber breaker in 1974 helped to guarantee area needs, but the facility was closed during the summer. Many homeowners have converted to other energy sources for home heating, decreasing demand for anthracite. During the winter of 1974–75, a large mine operator donated 188 tons of coal to the Neighborhood Assistance Act, Department of Community Affairs, for distribution to families who were unable to obtain coal for financial or other reasons. Coal prices dropped slightly during the year. At the beginning of 1975, dealers in the anthracite region sold coal for $60 to $65 per ton, compared with $58 to $62 per ton at yearend. Coal prices were the subject of a U.S. Department of Justice antitrust investigation held in Harrisburg, in early September.

A government-financed study of the anthracite region by Berger Associates of Camp Hill indicated a potential anthracite market of 17 million tons by the year 1990. The report also detailed recommendations for revitalizing the industry.[8]

PP&L of Alletown began a 1-year study of the economics of building an electricity generating station burning anthracite. Four 400,000-kilowatt generating units were being considered which would consume 4 million tons of hard coal per year. Although hard coal is more difficult to extract than bituminous, because of the steeply pitching seams, the low sulfur content of anthracite requires less air pollution control equipment to meet current air standards.

To assist the anthracite mining industry, a conference on anthracite technology was sponsored by the Office of Coal Research (OCR), and the University of Scranton on January 6–7, 1975. The Special Assistant for Economic Affairs, State Planning and Development, presented a report on "Large Scale Anthracite Mining" which resulted in the Governor's Science Advisory Committee forming an anthracite panel which met in Harrisburg on May 2 and May 30, 1975. The panel's report "Recommendations on a Feasibility Analysis" on open pit anthracite mining was published in January 1976.

A member of the anthracite task force visited the mining regions of England, Germany, and Poland in early November to study mining methods in those countries which may be applicable to the anthracite region. The task force was appointed by the Mining Enforcement and Safety Administration (MESA) to study and identify problems confronting the Pennsylvania anthracite industry.

Beltrami Enterprises announced in late March 1975 the purchase of the Huber breaker, located at Ashley, from the Blue Coal Corp. Seventeen months later the breaker was dismantled for scrap.

Lehigh Valley Anthracite, a subsidiary of Pagnotti Enterprises, West Pittston, planned to reopen the Harry E. breaker in Swoyersville on a limited basis for production of small-size coal for industrial purposes. Twenty men will be employed at the breaker. Pagnotti interests also operate the breakers located at Jeddo Highland and Shenandoah, and one at the Hazleton shaft.

Swatara Coal Co., Zerbe, invested over $2 million in new equipment to meet the rising demand for anthracite. Swatara Coal has between 2,500 and 3,000 acres in reserves in Schuylkill County, and is projecting a production of 150,000 tons per year.[9]

Coal (Bituminous).—Pennsylvania ranked third in the Nation in bituminous coal production producing 84.1 million

[8] Coal Mining and Processing. Can Anthracite Make a Comeback. V. 13, No. 1, January 1976, pp. 60–63, 73, 74.
[9] Constructioneer, Aug. 18, 1975, pp. 42, 44.

Table 4.—Pennsylvania: Summary of anthracite mines and production, and number of employees, in 1975

District	Operators	Number of mines					Number of employees					Production (short tons)			
		Deep mines	Bank mines	Strip mines	Breaker and washery plants	Total	Deep mines	Bank mines	Strip mines	Breaker and washery plants	Total	Deep mines	Bank mines	Strip mines	Total
5	29	2	26	--	23	51	14	90	--	232	336	579	877,928	--	878,507
6	18	11	17	--	12	40	47	58	--	258	363	10,596	273,793	--	284,389
7	35	[1] 28	4	--	12	44	126	21	--	108	255	56,357	158,736	--	215,093
8	17	11	3	--	5	19	57	8	--	69	134	30,682	266,990	--	297,672
9	26	5	28	--	20	53	15	166	--	413	594	10,763	802,895	--	813,658
10	27	17	4	--	10	31	85	12	--	86	183	65,599	40,520	--	106,119
11	16	11	3	--	4	18	124	22	--	88	234	136,904	84,665	--	221,569
12	30	24	2	--	5	31	265	8	--	37	310	285,143	14,888	--	300,031
53	9	--	--	13	--	13	--	--	153	--	153	--	--	173,241	173,241
56	2	--	--	2	--	2	--	--	12	--	12	--	--	2,714	2,714
57	11	--	--	17	--	17	--	--	183	--	183	--	--	320,420	320,420
58	4	--	--	15	--	15	--	--	530	--	530	--	--	924,838	924,838
59	10	--	--	29	--	29	--	--	221	--	221	--	--	321,004	321,004
60	14	--	--	26	--	26	--	--	369	--	369	--	--	769,486	769,486
Total	[2] 248	109	87	102	91	389	733	385	1,468	1,291	3,877	596,623	2,520,415	2,511,703	5,628,741

[1] One deep mine in the 7th District is a tourist attraction only.
[2] Owing to some companies operating in more than one district, the actual total number of anthracite operators is 203, including 43 companies operating strip mines.

Source: Pennsylvania Department of Environmental Resources, 1975 Annual Report on Mining, Oil and Gas, and Land Reclamation and Conservation Activities.

Table 5.—Pennsylvania: Production of anthracite coal, and number of employees, in 1975, by county

County	Production (short tons)				Number of employees				
	Deep mines	Bank mines	Strip mines	Total	Deep mines	Bank mines	Strip mines	Breaker and washery	Total
Carbon	--	54,132	41,131	95,263	--	13	50	--	63
Columbia	32,199	--	13,634	45,833	50	--	38	--	88
Dauphin	13,645	11,473	--	25,118	16	3	--	18	37
Lackawanna	--	194,270	8,050	202,320	--	40	3	68	111
Luzerne	579	832,902	856,568	1,690,049	15	75	442	352	884
Northumberland	54,513	426,376	310,084	790,973	105	31	195	176	507
Schuylkill	495,687	1,001,262	1,253,828	2,750,777	547	223	718	660	2,148
Sullivan	--	--	28,408	28,408	--	--	22	9	31
Susquehanna	--	--	--	--	--	--	--	8	8
Total	596,623	2,520,415	2,511,703	5,628,741	733	385	1,468	1,291	3,877

Source: Pennsylvania Department of Environmental Resources, 1975 Annual Report on Mining, Oil and Gas, and Land Reclamation and Conservation Activities.

tons, an increase of 5% compared with 1974 output. Of this total, 46% was produced by surface operations and 54% by auger and deep mine production; these were increases of 8% by surface means and an increase of 2% by other means. Employees in the deep mines increased 16%, strip employees increased 26%, refuse employees increased 36%, tipple and preparation plant employees increased 6%, and auger employees decreased 22%.

Seventeen fatalities occurred in the bituminous region compared with 20 in 1974. Eleven fatalities were underground and six at surface operations. Of the 11 underground fatalities, 2 were caused by roof falls, 1 occurred during timbering operations, and 8 were transportation-related fatalities. Five of the six surface fatalities were related to surface equipment, and one fatality was due to a fall.

The total value of bituminous coal was $2,111 million, an increase of 29% from the 1974 value due to a price increase of $4.74 to $25.09 per ton of coal.

Washington County was the leading bituminous coal producer in the State with 13.4 million tons followed by Indiana, 10.3 million tons; Clearfield, 8.1 million tons; Greene, 8.1 million tons; Cambria, 7.4 million tons; Armstrong, 7.2 million tons; Somerset, 6 million tons; Clarion, 5.3 million tons; and Allegheny, 4 million tons. Lesser amounts of bituminous coal were produced by 19 other counties in the western part of the State. Washington County was the leading producer of underground mined coal, Clearfield County led all other counties in production from surface operations, Indiana County led in auger production, and Cambria County led in refuse production of coal. The number of mines totaled 835, a decrease of 226 from the 1974 total.

During the year, 616 bituminous operators operated 132 underground mines, 661 strip mines, 39 auger mines, and 3 strip-auger mines. The number of strip operations decreased by 202 during 1975.

The leading producers of underground mined coal in declining order, each producing over 1 million tons, were Bethlehem Mines Corp., United States Steel Corp., Consolidation Coal Co., Rochester and Pittsburgh Coal Co., Republic Steel Corp., Greenwich Collieries, Barnes & Tucker Co., Mathies Coal Co., J&L, the Florence Mining Co., Helvetia Coal Co., Duquesne Light Co., and Gateway Coal Co.

The leading operators of strip and auger coal, each producing over 1 million tons, in declining order, were C&K Coal Co., Benjamin Coal Co., and Shannon Coal Co.

During the year, 36% of the bituminous coal was shipped to market by rail, 18% was shipped by water, and 43% was shipped by truck or transported by belt; 3% was coal used locally for domestic purposes and in the manufacture of coke. Four years ago 50% of the bituminous coal was shipped by rail, 20% by water, and 29% by truck; the remaining 1% was used locally. The primary reason for increased shipments of coal by truck between 1971 and 1975 was the increase in the total number of stripping operations, many of which were not located near rail systems or navigable waterways.

During the year, 34,170 employees were working in the bituminous region; 19,830 were listed as inside employees, and 14,340 as outside employees. Of those working inside the mines, 13,636 were employed on mechanical loading sections, 6,112 in other occupations, and 82 in hand-loading sections. Outside employees consisted of 2,584 superintendents, foremen, and clerks; 36 coke employees; and 11,720 in various other outside occupations.

Fourteen bituminous coal seams were mined by underground methods in Pennsylvania during 1975. Over 83% of the coal was produced in the Pittsburgh, Lower Freeport, Upper Freeport, and Lower Kittanning seams. The Pittsburgh seam accounted for 42% of the underground production; Lower Freeport, 13%; Upper Freeport, 14%; and Lower Kittanning, 14%. The Pittsburgh seam was mined primarily in Washington, Greene, and Allegheny Counties, with lesser production from Fayette, Westmoreland, and Indiana Counties.

The Lower Freeport was mined in Armstrong, Cambria, Jefferson, Indiana, Somerset, and Westmoreland Counties. Production of coal from the Upper Freeport took place in Allegheny, Armstrong, Beaver, Butler, Cambria, Indiana, Somerset, and Westmoreland Counties. The Lower Kittanning coal seam was mined in Armstrong, Cambria, Clearfield, Indiana, Jefferson, and Somerset Counties.

Table 6.—Pennsylvania: Bituminous coal production, by type of mine and county, 1975

(Excludes mines producing less than 1,000 short tons annually)

County	Number of mines					Production (Thousand short tons)					Value (thousands)
	Underground	Strip	Auger	Strip-auger	Total	Underground	Strip	Auger	Strip-auger	Total [1]	
Allegheny	7	16	--	--	23	3,293	664	--	--	3,957	$105,780
Armstrong	12	64	9	3	88	4,076	2,977	88	48	7,189	126,619
Beaver	1	5	--	--	6	157	30	--	--	187	4,606
Bedford	--	2	--	--	2	--	W	--	--	W	W
Blair	--	2	--	--	2	--	W	--	--	W	W
Butler	1	21	4	--	26	W	1,109	(2)	--	1,373	27,069
Cambria	18	22	--	--	40	5,623	1,766	--	--	7,390	267,816
Centre	1	12	--	--	13	W	W	--	--	1,469	31,933
Clarion	--	51	1	--	52	--	5,324	12	--	5,336	91,138
Clearfield	4	90	1	--	95	W	7,380	(2)	--	8,124	165,702
Clinton	--	7	--	--	7	--	433	--	--	433	8,475
Elk	--	14	4	--	18	--	651	31	--	682	11,168
Fayette	3	62	--	--	65	W	W	--	--	2,816	58,974
Fulton	--	1	--	--	1	--	W	--	--	W	W
Greene	15	25	--	--	40	7,175	880	--	--	8,055	268,029
Huntingdon	--	1	--	--	1	--	W	--	--	W	W
Indiana	27	52	8	--	87	7,860	2,363	89	--	10,312	198,001
Jefferson	4	42	3	--	49	W	2,014	(2)	--	2,147	43,445
Lawrence	--	17	2	--	19	--	W	(2)	--	564	9,316
Lycoming	--	3	--	--	3	--	W	--	--	W	W
Mercer	--	3	--	--	3	--	336	--	--	336	7,473
Somerset	21	67	6	--	94	2,091	3,889	44	--	6,024	161,754
Tioga	--	2	--	--	2	--	W	--	--	W	W
Venango	--	10	--	--	10	--	451	--	--	451	7,247
Washington	13	26	1	--	40	10,974	2,386	1	--	13,360	430,290
Westmoreland	5	44	--	--	49	960	1,886	--	--	2,846	73,787
Undistributed	--	--	--	--	--	2,422	4,564	90	--	1,084	12,390
Total [1]	132	661	39	3	835	44,631	39,105	354	48	84,137	2,111,009

W Withheld to avoid disclosing individual company confidential data; included with "Undistributed."

[1] Data may not add to totals shown because of independent rounding.

[2] Included with strip to avoid disclosing individual company confidential data.

Only one underground mine, located in Centre County, produced coal from the Brookville seam. Six underground mines, located in Greene County, produced coal from the Sewickley seam.

Of the 154 underground mines in the bituminous field, as listed by the Pennsylvania DER, 19 were classified as shaft mines, 23 as slope mines, 91 as drift mines, 13 as having shaft and slopes, and 8 as shaft and drift mines.

The thinnest seam being mined by underground means was a 29-inch Lower Kittanning seam located in Clearfield County, while the thickest seams were the 108-inch-thick Freeport seam in Armstrong County and the 108-inch Pittsburgh seam in Fayette County. The average thickness of the Pittsburgh seam in southwestern Pennsylvania is 66 to 70 inches in Washington and Greene Counties where the majority of the Pittsburgh seam coal is produced.

During 1975, coal became more important as an energy source because of the declines of oil and gas supplies and the Nation's dependence on foreign oil suppliers. In early July the FEA ordered 25 utility companies to burn coal rather than oil or natural gas in 74 powerplants across the Nation, which reportedly would save an estimated 64 million barrels of oil and 88 billion cubic feet of natural gas per year.

New coal mine development and expansion planned in Pennsylvania totaled 28.7 million tons. Thirty-five planned underground mines have an estimated capacity of 25.7 million tons, and two surface mines have a capacity of 3 million tons. Of the anticipated tonnage, approximately 12.2 million tons of coal is classified as metallurgical and 16.5 million tons as steam coal.

To meet the demand for coal, United States Steel Co. is currently developing the Cumberland mine located at Kirby, Greene County. Two 2,400-foot-long slopes will intersect the coal seam. A cleaning plant plus two coal silos will be constructed near the mine, and the cleaned coal will be shipped by rail over the 17-mile line which is under construction, terminating near Alicia on the Monongahela River. The coal will be shipped to Ontario Hydro, Canada's largest utility, under a 30-year contract calling for 90 million tons of coal. United States Steel is also developing the Dilworth mine, located on the Monongahela River about 65 miles south of Pittsburgh. Dilworth's expected 4-million-ton production per year will eventually replace production from the vast Robena complex, which was started in 1943 and is nearing exhaustion of its reserves. Coal produced at Dilworth will be barged to the Robena cleaning plant, and the processed coal will be shipped to the Clairton works for conversion into coke, coke oven gas, and coal chemicals.

Bethlehem Mines Corp., a subsidiary of Bethlehem Steel Corp., will open mine 38E north of Ehrenfeld, near Johnstown. Production is expected to be 400,000 tons per year of metallurgical coal, and the mine will employ 280 when fully operational in 1978. Coal will be mined from the Upper Freeport seam and cleaned in the Cambria Slope preparation plant in Ebensburg. Life expectancy of the mine is over 25 years.

Consolidation Coal Co. opened the Laurel mine located along Route 160, about midway between Central City and Reels Corner. The National Mines Corp. property is managed by Consol, and the mine will have a life expectancy of over 17 years. High-grade metallurgical coal, less than 1% sulfur, will be produced from the Lower Kittanning or "B" seam, with full production of 800,000 tons per year anticipated by 1977.

Cerro Corp., which purchased the Fetterolf Coal Co. in Somerset County in early 1974, announced plans to open two new mines and to expand coal preparation facilities to meet metallurgical coal needs overseas. Fetterolf's coal-producing capacity will be increased from 1 million to 1.4 million tons of cleaned coal annually. Cerro Corp. also acquired the Stott Coal Co., Philipsburg, which has an annual capacity of 400,000 tons of metallurgical coal per year, in late August 1975.

Emerald Mines Corp., a subsidiary of Lykes-Youngstown Corp., has planned a 2.-million-ton-per-year mine near West Waynesburg, Green County. Metallurgical coal will be mined from the 18,118 acres of coal reserves and used primarily for the steel industry.

Rochester and Pittsburgh Coal Co. is developing three mines in the Shelocta area, Armstrong County. The Urling No. 1, Urling No. 2, and Margaret 11 mines

will supply 4.2 million tons of coal per year to the Keystone generating station near Elderton.

J&L plans to acquire additional Freeport coal seam reserves near Waynesburg and possibly open a mine to produce metallurgical coal.

At the J&L Shanopin mine, seven women were recently hired and after a 90-day training period will be placed in the permanent positions for which they are best qualified.

Barnes & Tucker, a subsidiary of Alco Standard Corp., entered into new coal lease agreements in central Pennsylvania. These properties contain an estimated recoverable coal reserve of 184 million tons, of which 165 million tons are undeveloped coal properties.

Gulf Resources and Chemical Corp. purchased the W. P. Stahlman Coal Co. of Brookville. The company had been producing about 265,000 tons of strip-mined coal annually in Clarion and Jefferson Counties. Gulf intends to increase production in the near future.

Zapata Corp.'s subsidiary, Penn West Fuels Inc., has acquired Doverspike Bros. Coal Co., which has 8,000 acres of coal near Kittanning. Zapata's other mines are located near Indiana and in Boone and Logan Counties, W. Va.

Oil Shale Corp. purchased producing coal properties in central Pennsylvania which produced 400,000 tons of coal per year. Oil Shale holds western oil-shale lands and is a petroleum refiner and marketer.

PP&L entered into agreement with Manor Real Estate Co. of Philadelphia for the purchase of 11,000 acres of coal in southwestern Pennsylvania for $1,183 per acre. The agreement was signed by two PP&L affiliates, Greene Manor Coal Co. and Greene Hill Coal Co. Pennsylvania Mines Corp., a wholly owned subsidiary of PP&L, also owns Greenwich Collieries, Rushton Mining Co., and Tunnelton Mining Co. Other planned mines include GM&W Coal Co., Grove Nos. 2, 3, and 4; Helvetia Coal Co., Lucerne Nos. 8 and 9; North American Coal Corp., Josephine No. 2; North Somerset Mining and Construction Co.; Barnes & Tucker, Tanoma mine, and Yellow Creek mine; Canterbury Coal Co., Dianne mine; Old Home Manor, No. 4 mine, Five Points; and Solar Fuel Co., Solar Fuel Nos. 7, 9, 10, 11, and 12.

In 1974 United States Steel's Maple Creek No. 2 mine received the Nation's highest underground coal mining award, "The Sentinels of Safety," for the best safety record of any underground coal mine in the Nation. United States Steel's coal mines have earned the award 16 times since 1952, with the Frick district mines receiving the award 9 times. For 1975 another Pennsylvania mine, Banning No. 4 mine owned by the Republic Steel Corp., located at West Newton, received the award for a record of 550,892 man-hours worked without a disabling injury. The annual competition is cosponsored by MESA and the American Mining Congress to promote greater interest in safety and to promote development of more effective accident prevention programs, and 1975 was the 50th year of competition among domestic producers of minerals.[10]

The major coal seams being surface-mined are the Lower Kittanning with 6 million tons produced in 1975; Upper Freeport, 5 million tons; Waynesburg, 3 million tons; Pittsburgh, 3 million tons; Middle Kittanning, 2.2 million tons; Lower Freeport, 1.8 million tons; Brookville, 1.7 million tons; and Clarion, 1.3 million tons. The Lower Kittanning, the most extensively surface-mined seam in the State, was worked in Armstrong, Beaver, Butler, Clearfield, Cambria, Clinton, Centre, Clarion, Elk, Fayette, Indiana, Jefferson, Lawrence, Somerset, and Venango Counties.

DER issued 184 mining permits to mine operators with surface operations in the Lower Kittanning; 38 of these were located in Clearfield County, 24 in Clarion, 14 in Jefferson, and the remainder in the other listed counties. Only one permit each was issued in Clinton and Lawrence Counties.

The Lower Kittanning is actually a complex of five splits which may be combined, forming an unusually thick seam such as the one being mined in Somerset County, which is 72 inches thick. At one location in Clearfield County the Lower Kittanning is 60 inches thick, while elsewhere in the county it is only 18 inches thick. In Clarion County the Lower Kit-

[10] Coal Mining and Processing. V. 2. No. 4, April 1975. Mining Congress Journal. November 1976.

tanning being mined by one operator is only 12 inches thick but its thickness ranges from 18 to 36 inches in other locations within the county.

Very little is known of the Lower Kittanning in the southwestern part of the State since it lies approximately 900 feet below the rich Pittsburgh seam, which is being mined extensively in Washington and Greene Counties.

The Upper Freeport, the second most productive seam strip mined, maintains a minable thickness of 36 to 46 inches over most of the area.

The Waynesburgh coal is surface-mined in Fayette, Westmoreland, Greene, and Washington Counties, and usually occurs 300 to 400 feet above the Pittsburgh bed.

The 4- to 6-foot Pittsburgh seam is usually deep-mined in the southwestern part of the State; it is strip-mined mainly in Fayette, Westmoreland, and Washington Counties, with lesser amounts produced in Allegheny, Armstrong, Indiana, and Somerset Counties.

Of the bituminous coal stripped and shipped to market, 61% is by truck, 35% by rail, and 4% by water. Sixty-five percent of the auger-mined coal was shipped to market by rail and 35% by truck.

Each day U.S. coal mines vent to the atmosphere more than 200 million cubic feet of methane containing 180 billion Btu the energy equivalent of 7,200 tons of coal.[11] Research studies indicate it is technically feasible to degasify portions of the Pittsburgh coalbed with horizontal boreholes drilled into a coalbed from the bottom of any shaft. For more effective degasification, shafts should be sunk to the coalbed long before normally required.[12]

Drilling for commercial quantities of gas began in early September when Pennsylvania Enterprises, Inc., a parent company of Pennsylvania Gas and Water Co., began drilling in Hanover Township between Middle Road and Sans Souci Parkway in Wilkes-Barre. The 1,800-foot hole will be drilled into the Red Ash seam.

The Bureau of Mines announced in early April that drilling will take place in the coalbeds near Pittsburgh and in Schuylkill County to evaluate their potential as producers of pipeline gas.

The Pennsylvania State University (Penn State) formed a research group to conduct a 5-year program on methane extraction from coal seams before mining and recovery of the gas for use as a fuel. First-year project plans include five boreholes: Three at United States Steel's Cumberland mine, one in the anthracite seam, and one on State land. Penn State scientists are investigating injection of liquid silicic acid gel into the coal seam to prevent drainage of methane into the working face area.

In late December, National Mine Service Co. planned a joint venture with Gebr. Eickhoff of Bochum, West Germany, to make and distribute longwall mining equipment in the United States. The new company plans to produce two Eichoff longwall systems each month.

A recent study by the Maritime Administration showed that inland waterways will move 82% more coal annually by the year 2000. In the Pittsburgh district, 63,957,724 tons of cargo moved by water on the Allegheny, Monongahela, and upper Ohio Rivers in 1975. Of this total, 72%, or 46 million tons, was coal, an increase of 1.5 million tons over the average for the last 10 years.

Current navigation projects on the Monongahela River are the Grays Landing lock and dam and the replacement Point Marion lock. Other locks and dams that may be renovated include lock 3 at Elizabeth, which is 70 years old, and Dam 2 at North Braddock, 72 years old.

In early July Congress was urged to list parts of the Allegheny River between the Kinzua Dam and the town of East Brady as possible additions to the Federal scenic and wild river system. The Allegheny River Protective Association (ARPA) is also trying to preserve the river as a scenic and recreational area and has discouraged dredging for sand and gravel. Dredge operators must currently obtain a State permit as well as a Corps of Engineers permit prior to mining.

Efforts to classify the Laurel Hill Creek Watershed as a conservation area may prevent strip mining of coal in the western part of Somerset County. The Laurel Watershed Association was organized in

[11] Irani, M. C., P. W. Jeran, and M. Deul. Methane Emission From U.S. Coal Mines in 1973, A Survey. A Supplement to IC 8558. BuMines IC 8659, 1974, 47 pp.

[12] Fields, H. H., J. H. Perry, and M. Deul. Commercial-Quality Gas From a Multipurpose Borehold Located in the Pittsburgh Coalbed. BuMines RI 8025, 1975, 14 pp.

early June when mine operators filed for a strip-mining permit. In early February residents of southern Venango County protested against strip mining because it may endanger the water supply and affect a watershed reclamation project. Residents of Harrison Park, Penn Township, opposed strip mining on the 110-acre Berlin Road Turnsik Farm, which borders Bushy Run Park, and the Donora Council was reviewing the Palmer Park coal-stripping problem.

The Leechburg Mining Co. near Apollo was allowed to reopen in 1974 after plans included restoration at the rate of 20 acres per year of a waste area that caused acid pollution of the Kiskimenatas River.

The Laurel mine near Central City in the northeastern part of Somerset County spent nearly $1 million to comply with the environmental requirements. The slurry from the cleaning plant's settling lagoons remains a problem, and a State permit is being obtained.

Coke.—Commonwealth of Pennsylvania Court has supported DER's refusal to allow Lucerne Coke Co. to reactivate 264 beehive coke ovens, located near Homer City, on the grounds that no evidence was presented that the beehive ovens could be operated in compliance with State air quality standards. The coke ovens had been shut down since 1971.

Petroleum and Natural Gas.—The American Petroleum Institute reported a total of 1,399 wells drilled for a total footage of 3,353,341 feet. Of these, 1,290 were drilled in proven fields and 109 were listed as exploratory wells.

Most of the activity in shallow gasfields was in Indiana County with 388 gas wells; Westmoreland, 62; Jefferson, 60; Armstrong, 46; Clearfield, 20; Washington, 14; and McKean, 10. The majority of the shallow oil development was in Warren County with 273 wells producing from the Glade sandstone; Venango County, with 175 oil wells producing from the Red Valley and Venango Second sandstones; McKean County with 146 wells in the Second and Third Bradford; and Forest County with 72 wells producing from the Red Valley and Venango Second sandstones.

Pennsylvania-grade crude petroleum production totaled 3.2 million 42-gallon barrels valued at $39.6 million, with an additional 67,000 barrels of Corning-grade crude oil valued at $787,240, a decrease of 6% in quantity but a 9% increase in value compared with the 1974 figures.

Table 7.—Pennsylvania: Oil and gas well drilling completions, by county

County	Proved field wells [1]			Exploratory wells			Total	
	Oil	Gas	Dry	Oil	Gas	Dry	Wells	Footage
Armstrong	--	46	3	--	--	1	50	170,110
Beaver	--	--	--	--	2	1	3	6,751
Bedford	--	--	--	--	--	1	1	7,203
Blair	--	--	--	--	--	1	1	11,355
Butler	2	--	2	--	--	2	6	9,169
Cambria	--	1	--	--	3	2	6	23,158
Cameron	--	--	--	--	--	1	1	6,925
Clarion	1	6	1	--	--	--	8	19,332
Clearfield	--	17	--	--	3	5	25	89,544
Crawford	4	1	--	1	2	4	12	31,100
Elk	4	3	--	--	--	4	11	32,000
Erie	--	4	1	--	3	3	11	39,096
Fayette	--	1	--	--	2	4	7	34,632
Forest	68	2	--	4	2	--	76	79,980
Indiana	--	373	4	--	15	2	394	1,394,483
Jefferson	--	57	--	--	3	2	62	214,066
Lawrence	--	--	--	--	--	1	1	949
McKean	146	7	--	--	3	2	158	295,556
Mercer	3	1	--	--	--	2	6	10,387
Potter	10	1	--	--	--	--	11	20,232
Somerset	--	--	--	--	2	4	6	56,937
Venango	172	1	1	3	--	2	179	147,990
Warren	270	--	3	3	1	1	278	331,058
Washington	--	14	--	--	2	--	16	64,497
Westmoreland	--	59	1	--	3	7	70	256,831
Total	680	594	16	11	46	52	1,399	3,353,341

[1] Development wells as defined by American Petroleum Institute.

Source: American Petroleum Institute.

Most of the Corning-grade crude was produced in Crawford County from the Medina sandstone.

Natural gas production totaled 84.7 billion cubic feet, an increase of 2% from that of 1974. The shallow reservoirs, Upper Devonian or younger, produced 72 billion cubic feet; the deep reservoirs, Middle Devonian or older, produced 12 billion cubic feet. The estimated number of producing gas wells totaled 17,500. Natural gas liquid production decreased 8% compared with 1974 output.

A shale oil discovery was made in Vernon Township, Crawford County. The No. 1–A Dwight L. Moody well had an initial production of 184 barrels of oil per day from the Venango Second sandstone at a depth of 622 feet.

The first reported shale gas well in Pennsylvania was drilled in Beaver County, fracturing the Upper Devonian shale at a depth of 3,500 to 4,700 feet with an initial production of 150,000 cubic feet of gas per day. The No. 1–R. L. Lambert well, drilled to a depth of 8,636 feet into the Oriskany Sandstone in Somerset County, produced an initial flow of 2,500 thousand cubic feet per day of natural gas. The No. 2 Minard Run tract well in McKean County was drilled to a depth of 10,478 feet into the Cambrian Little Falls Dolomite with an open flow estimated at 500,000 cubic feet of gas per day.[13]

Commercial gas-bearing Medina sandstone was located as far south as southern Venango County, which could result in gas being produced in all of the counties of northwestern Pennsylvania.

PSU researchers are conducting field tests near Bradford in addition to laboratory studies to increase yield from previously depleted oilfields through the use of a third-stage method called micellar-polymer flooding. In this method a detergent (micellar fluid) is pumped into an injection well, cleaning oil from the rock grains as it moves. Then a second substance, a polymer, is injected behind the detergent solution to move it through the rock.[14]

Adobe Oil and Gas Corp. of Midland, Tex., reported a second confirmation well in the Keystone Lake gasfield in Westmoreland County from the Murrysville sand at 1,905 feet, flowing at a daily rate of 20 million cubic feet. Additional drilling is planned in this area. The gas is contracted at 80 cents per thousand cubic feet.

Columbia Gas Co. of Pennsylvania, servicing 176 industrial and 190,000 residential customers in western Pennsylvania, announced gas curtailments, as did Equitable Gas Co. and Peoples Natural Gas Co. Industrial customers were expected to have gas supplies reduced 20% to 55% during the winter months. In late October the Public Utility Commission (PUC) ordered Columbia Gas Co. to limit winter fuel curtailments to public schools to 10% below 1974 levels, but authorized 40% cutbacks for commercial customers.

Bethlehem Steel Corp. will operate for a 2-year period a newly designed Synthoil plant being constructed at Bruceton. The cost-sharing cooperative agreement between Bethlehem and the Federal Government proposes development for early industrial use of the Synthoil process, which converts coal into a clean-burning liquid fuel.

Another research project at Bruceton involves the Synthane process, which converts coal into synthetic methane. The Bruceton plant was designed and engineered by C–E.

Continental Oil Co.'s Conoco Coal Development Div., Library, Pa., was awarded a 4-year contract to determine the technical and economic potential of the zinc halide hydrocracking process for producing clean liquid fuels from coal. The first phase of the work will be completed at the Library Research Center.

Foster Wheeler Energy Corp. was awarded a contract to design and operate a coal liquefaction pilot plant near Pittsburgh capable of producing 24 barrels per day of clean fuel oil from 8 tons of coal using the Synthoil process.

Peat.—At least 90% of the peat found in Pennsylvania occurs in areas north of the glacial terminal moraine. Mine operators in six counties reported a total sales of 27,000 tons, 10% less than in 1974. The value of peat was $488,000, or 5% less than in 1974. The leading producing counties were Lackawanna, Wayne, Luzerne, Erie, Lawrence, and Monroe. Uses were mainly for humus and agricultural purposes.

[13] Pennsylvania Geology. November 1975, p. 9.
[14] Earth and Mineral Sciences. January 1976, pp. 30–31.

NONMETALS

Abrasives.—Silicon carbide abrasives were produced by one company located in Allegheny County. Metallic abrasives were produced by four companies in three counties in western Pennsylvania. The total amount of metallic abrasives sold or used was 27% less in tonnage and 22% less in value than in 1974. Types of abrasives produced were chilled iron shot and grit, annealed iron shot and grit.

Sintermet, a subsidiary of Asko, Inc., has begun production of wear-resistant tungsten carbide tooling for the steel industry at a new plant in Kittanning. The new plant was designed by Swindell-Dressler specifically for the manufacture of large-size carbide parts and has a hydraulic press capable of handling green parts up to 22 inches wide.

Cement.—Portland cement shipments from 17 plants in 8 counties were 22% less in quantity and 12% less in value, even though the average value per short ton increased $3.21 over that of 1974. Masonry cement shipments from 15 plants in 8 counties were 11.5% less in quantity with no change in total value, although the average value was $4.71 per short ton greater than in 1974. Northampton and Lawrence Counties were the largest producers of both portland and masonry cements.

Ready-mixed concrete companies used 58% of the finished portland cement, concrete product manufacturers used 22%, building material dealers used 11%, highway contractors used 8%, and the remaining 1% was used by other manufacturers and miscellaneous customers.

Consumption of energy for the producing plants showed the following changes compared with 1974: Natural gas increased 341%, fuel oil decreased 52%, bituminous coal decreased 24%, anthracite decreased 95%, electricity generated at the plants decreased 22%, and electricity purchased decreased 21%.

Clays.—Total production of common clay and shale, excluding kaolin, was 1,945,301 tons valued at $13,671,605, or 29% less in tonnage and 17% less in value than in 1974. Common clay and shale accounted for 60% of the total tonnage and 24% of the value of all clays and shales, excluding kaolin. Twenty-seven companies having 43 operations in 23 counties produced common clay and shale, and 20 companies with 38 operations in 10 counties produced fire clay. Common clay and shale averaged $2.84 per ton, and fire clay averaged $13.27 per ton. Two companies produced 37% of the common clay and shale, resulting in 48% of the total value of common clay and shale, and two companies produced 30% of the fire clay, amounting to 64% of the value of all fire clay produced in the State. Medusa Corp. produced unprocessed kaolin in Cumberland, and Narvon Mining and Chemical Corp. produced calcined kaolin in Lancaster County.

Gypsum.—U.S. Gypsum Co. calcined gypsum at Philadelphia. Output declined 37% and was 57% below the 1973 record.

Lime.—Ten plants in eight counties produced 1,940,000 short tons of burned and hydrated lime, 7% less than in 1974. Value of total production was $60,047,000, or 20% more than 1974. The average value of all production in 1975 was $30.95 per short ton, $6.84 more than in 1974. Pennsylvania ranked second in the United States with 10.14% of the total production and 11.46% of the total value. Centre County was the leading producer in the State with 33% of the total production and 30% of the total value. Other producing counties include Adams, Butler, Chester, Lebanon, Mifflin, Montgomery, and York.

Mica.—Scrap and flake mica was produced by one company in Adams County. Processed mica was used in paints, roofing, electric insulation, welding rods, rubber, and textile coating.

Mullite.—One company produced high-temperature sintered mullite at a plant in Philadelphia County. Compared with 1974, production was 19% less, but value was 15% more. Mullite is a heat-resistant mineral, a silicate of aluminum used in furnace linings.

Perlite.—Crude perlite was shipped into the State and expanded at five plants by five companies operating in five counties. Production totaled 33,693 short tons, or 12% less than 1974. The quanity sold or used in 1975 was 33,343 short tons valued at $2.6 million with an average value of $78.55. Principal uses for the product were formed products, fillers, and masonry and cavity fill insulation.

Table 8.—Pennsylvania: Clays sold or used by producers, by use [1]

(Short tons)

Use	1974	1975
Common brick	53,495	68,549
Face brick	1,417,532	851,421
Electrical porcelain	--	955
Firebrick, block, and shapes	707,966	646,602
Flue linings	41,444	41,421
Brakes, clutches, linoleum, and other fillers	3,128	--
Mortar and cement, refractory	12,948	16,378
Portland and other cements	172,432	108,675
Pottery	192	--
Roofing granules	--	8,305
Sewer pipe	101,988	W
Floor and wall tile, ceramic	6,000	4,300
Drain, quarry, and structural tile	33,947	50,671
Waterproofing and sealing	--	2,354
Other uses [2]	113,853	96,879
Exports:		
Face brick	28,984	--
Refractories	9,087	48,791
Sewer pipe	28,984	--
Total	2,731,980	1,945,301

W Withheld to avoid disclosing individual company confidential data; included with "Other uses."

[1] Excludes kaolin.

[2] Includes high-alumina refractories (1974), lightweight aggregate, paint (1975), terra cotta, and data indicated by symbol W.

Table 9.—Pennsylvania: Lime sold or used by producers, by use

(Thousand short tons and thousand dollars)

Use	1974		1975	
	Quantity	Value	Quantity	Value
Steel, BOF	1,004	23,800	982	29,900
Water purification	214	5,083	205	6,228
Steel, electric	111	2,620	124	3,762
Sewage treatment	154	3,639	101	3,081
Mason's lime	80	2,282	86	2,227
Steel, open-hearth	W	W	66	1,999
Agriculture	37	949	50	1,704
Acid mine water	67	1,594	36	1,096
Finishing lime	W	W	24	630
Paper and pulp	23	550	23	714
Tanning	W	W	6	192
Other uses [1]	390	9,630	237	8,514
Total	2,080	50,147	1,940	60,047

W Withheld to avoid disclosing individual company confidential data; included with "Other uses."

[1] Includes refractory dolomite, other chemical uses, soil stabilization (1974), other metallurgy, petroleum refining, explosives, sand-lime brick, insecticides, silica brick, wire drawing, other ore concentration, sugar refining (1975), paint, magnesite (1975), alkalies, and other uses indicated by symbol W.

Sand and Gravel.—The total output of sand and gravel decreased 4% in quantity, but increased 8% in value compared with the 1974 figures. Of the 16.4 million short tons of sand and gravel used for construction, 52% was processed sand, 42% was processed gravel, and 6% was unprocessed sand and gravel. Production of sand and gravel for construction declined 3% but increased 3% in value to $2.42 per short ton. The primary uses of construction sand and gravel were for residential construction, highway and bridge construction, concrete products, and bituminous paving.

Output of industrial sand and gravel totaled 1 million short tons, decreasing 9%; value increased 9%, and average unit value was $7.08 per short ton. Industrial sand was used for glass, molding, and foundry purposes.

The number of sand and gravel mines totaled 112, 1 more than in 1974. Production came from 39 of the State's 67 counties. The leading producing counties in order of declining production were Bucks, Armstrong, Erie, and Beaver. Bucks County ranked first in value, followed by Armstrong, Beaver, and Erie.

Table 10.—Pennsylvania: Construction and industrial sand and gravel sold or used by producers

Use	1974		1975	
	Quantity	Value [1]	Quantity	Value [1]
Construction:				
Processed:				
Sand	8,949	20,922	8,495	21,111
Gravel	7,359	16,838	6,947	17,771
Unprocessed:				
Sand and gravel	664	673	954	810
Industrial:				
Sand	1,099	6,508	1,005	7,120
Total	18,071	44,941	17,401	[2] 46,813

[1] Value f.o.b. plant per ton of processed sand and per ton of processed gravel. Values in all other tables are f.o.b. plant of blended processed sand and gravel used as construction aggregate. Unit value of construction aggregate is generally higher than the unit value of unblended processed sand or gravel.
[2] Data do not add to total shown because of independent rounding.

Table 11.—Pennsylvania: Construction aggregate and industrial sand and gravel sold or used commercially by producers

(Thousand short tons and thousand dollars)

Use	1974		1975	
	Quantity	Value	Quantity	Value
Processed:				
Concrete aggregate (including use in ready-mixed concrete):				
Nonresidential and residential construction	5,639	12,977	4,775	12,943
Highway and bridge construction	749	1,939	1,125	2,661
Other construction (dams, waterworks, airports, etc.)	257	822	510	1,512
Concrete products (cement blocks, bricks, pipe, etc.)	2,437	5,687	1,937	5,215
Bituminous paving (asphalt and tar paving)	1,219	2,738	1,052	2,756
Roadbase and subbase	778	1,623	760	1,828
Fill	160	346	150	318
Other uses	190	451	140	348
Unprocessed:				
Roadbase and subbase	305	220	138	161
Fill	356	451	359	379
Other uses	--	--	347	173
Industrial sand and gravel	1,099	6,508	1,005	7,120
Total [1]	13,189	33,762	12,299	35,415

[1] Data may not add to totals shown because of independent rounding.

Table 12.—Pennsylvania: Construction aggregate sold or used for publicly funded projects by producers

(Thousand short tons and thousand dollars)

Use	1974		1975	
	Quantity	Value	Quantity	Value
Processed:				
Concrete aggregate (including use in ready-mixed concrete):				
Nonresidential and residential construction	195	440	286	823
Highway and bridge construction	1,559	3,510	1,703	4,074
Other construction (dams, waterworks, airports, etc.)	129	292	88	230
Concrete products (cement blocks, bricks, pipe, etc.)	W	W	218	451
Bituminous paving (asphalt and tar paving)	2,012	5,487	1,801	5,790
Roadbase and subbase	696	1,147	557	1,100
Fill	42	89	232	549
Other	249	454	108	215
Unprocessed:				
Roadbase and subbase	W	W	5	W
Fill	W	W	104	95
Total	4,882	11,419	5,102	13,327

W Withheld to avoid disclosing individual company confidential data; included with "Unprocessed other."

Stone.—Pennsylvania ranked first in value and second in quantity of total stone produced, compared with other States. Total stone production dropped 18%; total value dropped 6% but increased an average of $0.27 per short ton. Total stone production in Pennsylvania totaled 60 million short tons valued at $150 million with an average value per short ton of $2.49, compared with 73 million short tons valued at $160 million or $2.18 per short ton in 1974.

Pennsylvania quarries totaled 246, or 5 fewer than in 1974. Dimension stone was produced by 31 quarries, and crushed and broken stone by 216 quarries. The types of stone produced in Pennsylvania were limestone, dolomite, granite, sandstone, quartzite, traprock, slate, and other stone.

Crushed and broken limestone in excess of 43 million short tons valued at $103 million with a unit value of $2.38 per short ton was produced at 140 quarries. Major uses of limestone were dense-graded roadbase stone, cement manufacture, other construction aggregate and roadstone, bituminous and concrete aggregate, and lime manufacture. Highest unit values of crushed and broken limestone were for whiting, $13.75 per short ton; refractory stone, $13.04; abrasives, $9.20; mine dust, $8.07; poultry grit, $6.80; and filler, $6.38.

Crushed and broken dolomite in excess of 2.6 million short tons valued at $6 million was produced at seven quarries. Uses of dolomite included agricultural limestone, concrete aggregate, bituminous aggregate, cement manufacture, and flux stone. The average unit value was $2.39 per short ton.

Granite included both dimension and crushed and broken stone. The unit value of rough granite blocks was $71.31 per short ton and value of flagging stone was $29 per short ton. Unit value of all granite dimension stone was $55.57 per short ton.

Crushed and broken stone also included sandstone, quartzite, traprock, and other stones. Other dimension stone included sandstone, quartzite, other stone, and slate.

Table 13.—Pennsylvania: Crushed limestone sold or used by producers, by use

(Thousand short tons and thousand dollars)

Use	1974		1975	
	Quantity	Value	Quantity	Value
Bituminous aggregate	4,966	10,122	4,280	10,326
Concrete aggregate	4,759	9,509	4,462	10,226
Dense-graded roadbase stone	12,536	23,960	9,710	20,165
Macadam aggregate	1,245	2,483	1,026	2,278
Other construction aggregate and roadstone	6,882	13,968	6,142	13,630
Surface treatment aggregate	3,154	5,826	2,586	5,343
Agricultural limestone [1]	2,080	7,366	1,707	6,948
Cement manufacture	10,055	16,498	7,089	13,958
Lime manufacture	4,422	9,862	3,471	8,665
Filter stone	231	W	46	W
Flux stone [2]	4,117	10,521	2,729	8,772
Manufactured fine aggregate (stone sand)	684	1,768	481	1,260
Mine dusting [3]	113	846	123	995
Mineral fillers, extenders, whitings	267	2,388	213	1,629
Railroad ballast	857	1,972	695	1,783
Refractory stone	4	W	2	W
Riprap and jetty stone	509	1,143	321	778
Other uses [4]	835	3,056	937	2,710
Total [5]	57,715	121,289	46,020	109,466

W Withheld to avoid disclosing individual company confidential data; included with "Other uses."

[1] 1974 data also include poultry grit and mineral food.

[2] 1974 data also include dead-burned dolomite.

[3] 1974 data also include abrasives.

[4] Includes stone used in abrasives (1975), acid neutralization, building products, glass manufacture, waste material, poultry grit and mineral food (1975), and uses indicated by symbol W.

[5] Data may not add to totals shown because of independent rounding.

Table 14.—Pennsylvania: Crushed limestone sold or used by producers, by county

(Thousand short tons and thousand dollars)

County	1974			1975		
	Number of quarries	Quantity	Value	Number of quarries	Quantity	Value
Armstrong	4	165	461	4	160	531
Berks	9	3,442	6,529	9	2,444	4,744
Blair	5	1,516	W	5	1,066	2,312
Butler	6	W	W	5	1,675	6,132
Centre	8	2,910	6,213	7	2,546	6,213
Chester	3	W	W	3	2,956	6,234
Cumberland	6	1,672	3,419	6	1,221	2,743
Fayette	6	W	W	4	1,342	3,785
Huntingdon	5	W	W	5	696	1,416
Juniata	--	--	--	1	179	312
Lawrence	4	1,442	3,413	4	1,090	3,198
Lebanon	3	W	W	3	2,725	6,949
Lehigh	8	2,818	W	8	2,088	3,787
Mifflin	5	W	W	5	324	745
Northampton	11	4,976	7,319	11	3,699	5,826
Northumberland	1	W	W	1	137	386
Schuylkill	1	232	340	1	202	408
Somerset	3	W	W	4	581	2,129
Westmoreland	6	W	W	3	679	2,011
York	10	W	W	10	3,591	9,131
Undistributed [1]	49	38,542	93,594	48	16,619	40,473
Total [2]	153	57,715	121,289	147	46,020	109,466

W Withheld to avoid disclosing individual company confidential data; included with "Undistributed."

[1] Includes Adams, Bedford, Bucks, Carbon, Clarion, Clinton, Columbia, Dauphin, Franklin, Fulton, Lancaster, Luzerne (1975), Lycoming, Monroe, Montgomery, Montour, Perry, Pike (1974), Snyder, and Union Counties, and counties indicated by symbol W.

[2] Data may not add to totals shown because of independent rounding.

Sulfur.—Petroleum refineries in Delaware and Philadelphia Counties and one steel company in Allegheny County produced 67,988 long tons and sold or used 67,736 long tons of sulfur valued at $2,550,873 with a value of $37.66 per long ton. Compared with 1974, production of sulfur increased 165%; sulfur sold or used increased 165%; total value increased 299%; and the unit price was up 51%. Stocks of sulfur increased from 1,087 long tons on January 1 to 1,339 long tons at yearend.

Tripoli (Rottenstone).—Crude tripoli was mined and processed by Keystone Filler & Manufacturing Co., Northumber- County. Compared with 1974 estimated figures, the tonnage sold or used was 71% less and its value was 93% less. Tripoli was used as an abrasive with minor use as a filler.

Vermiculite.—Crude vermiculite shipped into the State was exfoliated by three companies in three counties. The major uses of the product were for loose fill insulation, block insulation, concrete aggregates, horticulture, and soil conditioning.

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Cadmium.—Smelter production of cadmium decreased 77% in quantity and 86% in value compared with 1974.

Iron Ore.—Bethlehem Mines Corp. produced by five plants in four counties. mine in Berks County. Production was less than in 1974. All concentrates were pelletized prior to shipment to Bethlehem's steelmaking facilities.

Iron Oxide Pigments.—Natural or manufactured iron oxide pigments was produced by five plants in four counties. Iron oxide pigments were also produced from steel mill wastes at one location in Allegheny County during 1975.

Iron and Steel.—According to the American Iron and Steel Institute (AISI), Pennsylvania was the leading raw steel producer in the Nation with a production of 25,761,000 short tons, or 22% of the Nation's total, compared with 33,535,000 short tons, or 23% of the Nation's total, in 1974. Pennsylvania led the Nation in consumption of pig iron with 17,642,000 short tons, or 22% of the Nation's total. Other leading States in order of decreasing consumption were Indiana, Ohio, Michigan, and Illinois. Shipments of pig iron from Pennsylvania plants totaled 17,285,731 short tons valued at $2.9 billion—21% less in quantity but 13% more in value than in 1974. The average value of pig iron was $168.32 per short ton, or 42% more than in 1974. Blast furnace pig iron was classed as 93% basic, 4% bessemer, and 3% malleable and foundry. Stocks of pig iron at furnaces totaled 124,646 tons on January 1, and 204,818 tons at yearend. Active blast furnaces numbered 34 on January 1 and 25 at yearend. Idle blast furnaces totaled 16 on January 1 and 25 at yearend.

Early in February, steelmaking in the Pittsburgh district was at 90% of full capacity. Although local demand for finished steel was below the 1974 level, all major procedures had order backlogs in such major product lines as plate, oil country pipe and tube, special quality bar, tinplate, specialty tubing, and hot-rolled sheet and band. While these backlogs were diminishing, producers were building inventories of semifinished steel and some were building stock for customer accounts. Several producers of stainless steel trimmed their output and reduced their work force because of reduced demand.[15]

Demand for steel products continued to drop in late May with some mills operating at 60% of capacity. The uncertainty of the automotive industry, which buys approximately 25% of all the steel shipped in the United States, added to the industry's problems. United States Steel reported in late June that 4,000 of the 30,000 hourly workers employed at district plants were idle. J&L reported 3,000 of the 15,000 workers at Aliquippa and Pittsburgh were idle. Wheeling-Pittsburgh Steel Corp. reported that 15% of the work force was out of work.

Bethlehem Steel Corp. planned to close its four remaining fabricating shops during the next 2 years. The Leetsdale shop was to be phased out in 1977. The Pottstown, Montgomery County, shop was scheduled to close by late 1976, and the Bethlehem, Lehigh County, facility was scheduled to close by mid-1976. Although the fabricating facilities will be affected, the steelmaking facilities will continue normal operations.

[15] American Metal Market. V. 82, No. 31, Feb. 13, 1975, p. 5.

Lukens Steel Co. closed its open hearth operations in Coatesville and announced operation of its fourth electric arc furnace for the production of plate steels. The fourth unit, of 150-ton capacity, is equipped with a direct evacuation dust control system, a secondary canopy system, and a new baghouse.

Harsco Corp. announced plans in late September to halt steelmaking operations at its Harrisburg Steel Co. Div. by year-end. Harrisburg Steel will continue to manufacture high-pressure stainless gas cylinders using domestic steel purchased from other producers.

United States Steel closed its Pittsburgh steelmaking operations for repairs for 1 week, resuming operations on December 27.

Orders for steel became stronger in late August and early September, and industry representatives looked forward to 1976 with optimism.

Plant improvements were planned throughout the steel industry. J&L planned a $200 million modernization for its Pittsburgh steel works consisting of construction of a two-furnace basic oxygen shop and improved pollution control equipment for the coke ovens and other facilities.

United States Steel's Imperial Works, Oil City, will receive new machine tools; considerable tooling equipment will be rebuilt; and provisions will be made for additional welding and burning equipment to meet oil and gas industries needs.[16]

Bethlehem Steel Corp. planned to spend more than $600 million during the next 5 years for furnace fume filters and other environmental protection equipment. At Bethlehem's Johnstown plant, construction of a two-vessel oxygen steelmaking shop was scheduled for operation in 1978, which will replace open hearth furnaces.

Armco Steel Corp.'s Butler plant will install an argon-oxygen decarburization (AOD) vessel for the final refining and purifying of molten steels. Improvements to the dust collection systems were also planned.

Washington Steel Corp., Washington, was constructing a new mill for hot-rolling slabs and planned improvements to the electric furnaces and pressure-casting equipment and installation of a third slab-grinding machine.[17]

Jessop Steel Co. planned to boost capacity of stainless steel plate and other steel-producing facilities by 18% by installing new equipment, making building modifications, and improving handling equipment for the argon-oxygen vessel. Jessop Steel's Washington plant is said to be the only completely integrated stainless plate facility in the United States making plates more than 84 inches wide.[18]

Allegheny Ludlum Industries, Inc., located at Brackenridge announced a major expansion program of $40 million to $50 million over the next few years, which would include a 100-ton AOD vessel and a purifying unit to cut production costs. The expansion and modernization will increase the melting capacity of the Brackenridge plant by 30%, to 500,000 tons annually. Future improvements include a continuous slab caster and a 100-ton ultra-high-powered electric furnace.

Alan Woods Steel Co. continued with previous expansion plans; iron production has been increased 11%.

Babcock and Wilcox planned a $50 million seamless tubing facility for its Ambridge plant, increasing production of seamless tubing, speciality oil well tubing, and pressure and mechanical tubing.

Oakmont Corp., Oakmont, planned a $1 million expansion program to increase steelmaking capacity from 80,000 to 95,000 tons annually and to increase its steel wheel forging production 20%.

Molybdenum.—The Molybdenum Div. of AMAX Inc. produced technical-grade molybdic oxide at its Langeloth plant. The ore is mined at the company's operations in Colorado. The molybdic oxide from the Langeloth plant will feed the roaster complex at the Fort Madison, Iowa, plant.[19]

Molybdenite, a metallic bluish-gray sulfide ore mineral of molybdenum, was found as flakes up to ¾ inch across in a roadcut near Reading. The occurrence was not of economic size, but identify the general area as one which may be mineralized with other important elements.[20]

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[16] American Metal Market. V. 82, No. 33, Feb. 17, 1975, p. 18.
[17] American Metal Market. V. 82, No. 14, Jan. 21, 1975, p. 4.
[18] American Metal Market. V. 82, No. 28, Feb. 10, 1975, p. 23A.
[19] American Metal Market. V. 82, No. 186, Sept. 25, 1975, p. 2.
[20] Work cited in footnote 7.

Zinc.—Compared with other States, Pennsylvania ranked seventh in zinc production, producing 11,090 short tons valued at $16.4 million. The unit price of zinc was $0.39 per pound, or $780 per ton, an increase of 8% in value as compared with that of 1974.

St. Joe Minerals Corp. became the first domestic zinc producer to disclose plans in early January for reducing zinc production by more than 10% from its Monaca smelter.[21] In early March an additional 30% reduction took place, bringing the total announced reduction to 40%.[22]

New Jersey Zinc Co. had difficulties in obtaining sufficient natural gas supplies in early February and requested Federal Power Commission assistance. Since early January, New Jersey Zinc Co. has been producing zinc metal at 75% capacity and zinc pigments at less capacity because of a weakened zinc market. To treat effluents, New Jersey Zinc will test a pilot treatment facility using bulrushes at the zinc mine in Friedensville, which will remove zinc, sulfides, and other pollutants from the mine's waste water.[23]

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[21] Pages 1 and 24 of work cited in footnote 17.
[22] American Metal Market. V. 82, No. 54, Mar. 19, 1975, p. 1.
[23] Newsweek. Apr. 14, 1975, p. 86.

Table 15.—Principal producers

Commodity and company	Address	Type of activity	County
Abrasives: Satellite Alloy Corp.	9800 McKnight Rd. Pittsburgh, Pa. 15237	Plant	Allegheny.
Cement:			
Amcord, Inc.[1]	610 Newport Center Dr. Newport Beach, Calif. 92660	----do	Northampton.
Coplay Cement Manufacturing Co.[1]	Nazareth, Pa. 18064	----do	Lehigh and Northampton.
Keystone Portland Cement Co.[1]	Box 1785 Allentown, Pa. 18105	----do	Northampton.
Louisville Cement Co	501 South 2d St. Louisville, Ky. 40202	----do	Lawrence.
Medusa Corp.[1 2]	Box 5668 Cleveland, Ohio 44101	----do	Lawrence and York.
Penn-Dixie Industries, Inc.[1 2]	60 East 42d St. New York, N.Y. 10017	----do	Butler and Northampton.
United States Steel Corp.[1 3]	600 Grant St. Pittsburgh, Pa. 15230	----do	Allegheny and Northampton.
Clays:			
Dresser Industries, Inc	Box 6504 Houston, Tex. 77005	Pit	Clearfield and Somerset.
Glen-Gery Corp	227 North 5th St. Reading, Pa. 19601	Pit	Adams, Berks, Northumberland, Union, York.
Hanley Co	28 Kennedy St. Bradford, Pa. 16701	Pit	Jefferson and McKean.
Resco Products	Box 108 Morristown, Pa. 19404	Pit	Clearfield and Huntingdon.
Coal, anthracite:			
Greenwood Stripping Corp.	1 Venice St. Nesquehoning, Pa. 18240	Strip	Carbon and Schuylkill.
Jeddo-Highland Coal Co	800 Exeter Ave. West Pittston, Pa. 18643	Strip and culm bank.	Luzerne.
Leon E. Kocber Coal Co	Box 127 Valley View, Pa. 17983	Underground	Schuylkill.
Reading Anthracite Co	200 Mabantongo St. Pottsville, Pa. 17901	Culm bank and strip.	Northumberland and Schuylkill.
Coal, bituminous:			
Barnes & Tucker Co	357 Lancaster Ave. Haverford, Pa. 19041	Underground	Cambria.
Betblehem Mines Corp.[4 5]	701 East 3d St. Bethlehem, Pa. 18016	----do	Cambria and Wasbington.
C&K Coal Co	Box 69 Clarion, Pa. 16214	----do	Greene.
Pittsburg & Midway Coal Co.	10 Main Center Kansas City, Mo. 64105	----do	Washington.
Graphite, synthetic:			
Air Reduction Co., Inc	Theresia St. St. Marys, Pa. 15857	Plant	Elk.
Charles Pfizer & Co., Inc.[5]	235 East 42d St. New York, N.Y. 10017	----do	Northampton.
Stackpole Carbon Co	St. Marys, Pa. 15857	----do	Elk.
Gypsum, calcined: United States Gypsum Co.[6]	101 South Wacker Dr. Chicago, Ill. 60606	----do	Philadelphia.
Iron oxide pigments:			
The Prince Manufacturing Co.	Bowmanstown, Pa. 18030	----do	Carbon.
Reichard-Coulston, Inc	15 East 26tb St. New York, N.Y. 10010	----do	Northampton.
Lime:			
The J. E. Baker Co.[1]	Box 1189 York, Pa. 17405	----do	York.
Mercer Lime & Stone Co	1640 Oliver Bldg. Pittsburgh, Pa. 15222	----do	Butler.
National Gypsum Co.[1 2 7]	325 Delaware Ave. Buffalo, N.Y. 14202	----do	Centre.
Peat:			
Gouldsboro-Wayne Peat Co.	Box 68 Gouldsboro, Pa. 18424	Bog	Wayne.
Lake Benton Peat Moss	1418 North Main St. Scranton, Pa. 18508	Bog	Lackawanna.

See footnotes at end of table.

Table 15.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Perlite, expanded:			
Armstrong Cork Co	Lancaster, Pa. 17603	Plant	Lancaster.
Atlantic Perlite	Box 345 Primose, Pa. 19018	----do	Delaware.
Pennsylvania Perlite Corp.	Box 2002 Lehigh Valley, Pa. 18001	----do	Lehigh and York.
Perlite Manufacturing Co.	Box 478 Carnegie, Pa. 15106	----do	Allegheny.
Petroleum refineries: [8]			
Sand and gravel:			
Davison Sand & Gravel Co.	34th Ave. and 4th St. New Kensington, Pa. 15068	Dredge	Westmoreland.
Dravo Corp	1 Oliver Plaza Pittsburgh, Pa. 15222	----do	Beaver.
Erie Sand Steamship Co	Erie, Pa. 16500	----do	Erie.
Lycoming Silica Sand Co.[1]	401 Broad St., Box 159 Montoursville, Pa. 17754	Pit	Lycoming.
Shippingport Sand & Gravel Co.	1200 Slambaugh Bldg. Youngstown, Ohio 44501	Pit	Armstrong.
Warner Co.[1 4]	1721 Arch St. Philadelphia, Pa. 19103	Pit	Bucks.
Stone:			
G. & W. H. Corson, Inc.[4]	Plymouth Meeting, Pa. 19462	Quarry	Montgomery.
The General Crushed Stone Co.	712 Drake Bldg. Easton, Pa. 18042	----do	Bucks, Chester, Delaware, Lancaster, Luzerne, Perry.
Glasgow Quarry, Inc	Route 2, Box 121 Glasgow, Mo. 65254	----do	Montgomery.
Martin-Marietta Corp	11300 Rockville Pike Rockville, Md. 20852	----do	Centre, Chester, Fayette, Northampton.
New Enterprise Stone & Lime.	New Enterprise, Pa. 16664	----do	Bedford, Blair, Cumberland, Franklin, Huntingdon, Somerset.
Sulfur:			
Atlantic Richfield Co	3144 Passyunk Ave. Philadelphia, Pa. 19145	Plant	Philadelphia.
British Petroleum Corp., Ltd.	Box 428 Marcus Hook, Pa. 19061	----do	Delaware.
Gulf Oil Corp	Box 7408 Philadelphia, Pa. 19101	----do	Philadelphia.
Sun Oil Co	1608 Walnut St. Philadelphia, Pa. 19103	----do	Delaware.
Tripoli, rottenstone: Keystone Filler & Manufacturing Co.	Muncy, Pa. 17756	Pit	Northumberland.
Vermiculite, exfoliated:			
Hyzer & Lewellen	Box 155 Southampton, Pa. 18966	Plant	Bucks.
W. R. Grace & Co	62 Whittemore Ave. Cambridge, Mass. 02140	----do	Lawrence.

[1] Also stone.
[2] Also clays.
[3] Also coal.
[4] Also lime.
[5] Also iron ore.
[6] Also expanded perlite.
[7] Also cement.
[8] Many major oil companies operate refineries in Pennsylvania and several commercial directories contain lists of them.